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(54) **DISPLAY DEVICE AND LUMINANCE  
 CONTROL METHOD THEREFOR**

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(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,748,171 A \* 5/1998 Ishizaki et al. .... 345/101  
 6,023,130 A \* 2/2000 Sakasegawa et al. .... 313/582  
 6,133,682 A \* 10/2000 Murai et al. .... 313/403  
 6,191,505 B1 2/2001 Matsuyama  
 6,270,061 B1 8/2001 Bouquet et al.  
 6,288,495 B1 \* 9/2001 Yashiro ..... 315/169.1  
 6,313,821 B1 \* 11/2001 Mizuno ..... 345/101  
 6,320,568 B1 \* 11/2001 Zavracky ..... 345/101  
 6,331,843 B1 \* 12/2001 Kasahara et al. .... 345/60

**FOREIGN PATENT DOCUMENTS**

JP	6282241	10/1994
JP	9-6283	1/1997
JP	9198005	7/1997
JP	9288467	11/1997
JP	10215424	8/1998
JP	11194745	7/1999
JP	11212517	8/1999
JP	11231828	8/1999
JP	11288244	10/1999
JP	11-283228	10/2001
JP	2001200087	10/2001

**OTHER PUBLICATIONS**

An English Language abstract of JP 6-282241.  
 An English Language abstract of JP 9-6283.  
 An English Language abstract of JP 9-198005.  
 An English Language abstract of JP 10-215424.  
 An English Language abstract of JP 11-194745.  
 An English Language abstract of JP 11-288244.  
 An English Language abstract of JP 11-231828.  
 An English Language abstract of JP 9-288467.  
 An English Language abstract of JP 11-212517.  
 ITE '98: 1998 ITE Annual Convention, along with a partial  
 English Translation.

\* cited by examiner

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(57) **ABSTRACT**

A temperature difference estimated value is found from a  
 video signal using a temperature estimated value represent-  
 ing the temperature of the panel outer periphery of a display  
 screen of a PDP and a reference value representing the  
 temperature of the panel outer periphery of the PDP which  
 is outputted from a panel periphery temperature setter by a  
 temperature difference estimator, and the luminance of an  
 image displayed on a display is controlled depending on the  
 temperature difference estimated value by a controller and a  
 brightness controller.

**13 Claims, 18 Drawing Sheets**

